IN THE SPECIFICATION:

Please amend the paragraphs identified below as follows:

On page 4, the paragraph beginning on line 1, please amend as follows:

In order to achieve the above purpose, according to ~~claim 1~~ aspects of the present invention, a printed circuit board is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated on the core substrate, wherein a cavity is formed in the core substrate, and a plurality of capacitors are accommodated in the cavity.

On page 4, the paragraph beginning on line 7, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 1~~, a large cavity is formed in a core substrate, and a plurality of capacitors are accommodated in the cavity. With this arrangement, a plurality of capacitors can be reliably provided within the core substrate. The capacitors can be provided at places close to each other in the cavity, the package density of the capacitors can be increased. Since a plurality of capacitors are mounted within the cavity, the plurality of capacitors are aligned to the same heights with each other. A resin layer can be formed on the core substrate into a uniform thickness, and via holes can be stably formed. Since the cavity is formed in such a manner as to have a large area, the capacitors can be provided at accurate positions. As a result, an interlayer resin insulating layer and a conductor circuit can be properly formed on the core substrate, thereby lowering the rate of generating defective printed circuit boards.

On page 5, the paragraph beginning on line 2, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 2~~, a resin is charged between the capacitors in the cavity. With this arrangement, the capacitors can be fixed in the cavity after deciding their positions in the capacitors. The thermal expansion coefficient of the resin is made to be smaller than a thermal expansion coefficient of the core substrate, that is, is set to the value close to that of the chip capacitor made of ceramics. In this manner, even if internal stress is generated between the core substrate and the capacitors caused by the difference in the thermal expansion coefficients therebetween, cracks and

peelings do not easily occur in the core substrate. As a result, high reliability can be attained. In addition, no migration is generated, and the connection with the capacitors is stabilized.

On page 5, the paragraph beginning on line 17, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 3~~, a through hole is formed between the capacitors in the resin layer, and a signal line does not pass through the chip capacitors This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body.

On page 5, the paragraph beginning on line 30, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 4~~, an electric connection for electrodes formed with a metal film of the capacitors is established by via holes formed by plating. The electrodes of the chip capacitor are made by metallizing, and have pits and projections on their surfaces. However, the surfaces become smooth by formation of the metal film, and the via holes are then formed on the smooth surfaces. In this manner, when penetrating openings are formed in the resin coating the electrodes, no resin remains, and a reliability of the connection between the via holes and the electrodes can be increased. Furthermore, since the via holes are made by plating into the electrodes formed with the copper plated film, the electrodes are firmly connected to the via holes. No disconnection occurs between the electrodes and via holes even when a heat cycle test is conducted.

On page 6, the paragraph beginning on line 30, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 6~~, the chip capacitors are accommodated in the printed circuit board in the state where at least a part of the electrodes of each capacitor is uncoated with a coating layer and exposed to the outside. An electric connection for the electrode exposed from the coating layer is established. The metal exposed from the coating layer includes copper as a main component, because the connection resistance can be lowered.

On page 7, the paragraph beginning on line 6, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 7~~, a chip capacitor in which electrodes are formed along an inside of the outer edge thereof is used. With this arrangement, a large space can be used for external electrodes even if a conduction is established through the via holes, and therefore, the broadened range of alignment is allowed. As a result, a problem of disconnection is eliminated.

On page 7, the paragraph beginning on line 14, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 8~~, a chip capacitor in which electrodes are formed in matrix is used. It becomes easy to accommodate a large chip capacitor in a core substrate. Therefore, it becomes possible to increase an electrostatic capacity, and a problem concerning electricity can be solved. In addition, warpage is hard to generate in the printed circuit board even if the printed circuit board undergoes various thermal histories.

On page 7, the paragraph beginning on line 28, please amend as follows:

In accordance with additional aspects of the invention ~~recited in claim 9~~, a capacitor is mounted on the surface of the printed circuit board on top of the capacitors accommodated in the substrate. Since the capacitors are accommodated within the printed circuit board, the distance between the IC chip and each capacitor is shortened. In addition, the loop inductance can be lowered, and electric power can be instantaneously provided. On the other hand, since a capacitor is provided on the surface of the printed circuit board as well, a capacitor having a large capacity can be mounted. In this manner, large electric power can be easily supplied to the IC chip.

On page 8, the paragraph beginning on line 7, please amend as follows:

A method for manufacturing a printed circuit board according to an aspect of the present invention ~~claim 10~~ is characterized by comprising at least the following steps (a) to (c):

(a) forming a cavity in a core substrate;

(b) mounting a plurality of capacitors in the cavity; and

(c) charging a resin between the capacitors.

On page 8, the paragraph beginning on line 14, please amend as follows:

~~In the invention recited in claim 10, a~~ A large cavity is formed in a core substrate. With this arrangement, a plurality of capacitors can be reliably provided in the core substrate. In addition, since a plurality of capacitors are mounted in the cavity, the plurality of capacitors are aligned to the same heights with each other. As a result, the surface of the core substrate becomes flat and smooth. In addition, the cavity is formed in such a manner as to have a large area, the capacitors can be located at accurate positions. The interlayer resin insulating layer and the conductor circuit can be properly formed on the core substrate without impairing the flatness and smoothness of the core substrate. Therefore, the rate of generating defective printed circuit boards can be lowered. In addition, a resin is charged between the capacitors, the capacitors can be fixed in the cavity after the positions of capacitors are determined within the cavity.

On page 8, the paragraph beginning on line 32, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 11~~, a pressure is applied to the upper surfaces of the plurality of capacitors in the cavity, or tapped to align the chip capacitors into the same heights with each other. By this process, even if chip capacitors having largely different sizes from each other are provided in the cavity, they are aligned into the completely same heights with each other. As a result, the core substrate can has a flat and smooth surface. The interlayer resin insulating layer and the conductor circuit as upper layers can be properly formed on the core substrate without impairing the flatness and smoothness of the core substrate, and therefore, the rate of generating defective printed circuit boards can be lowered.

On page 9, the paragraph beginning on line 13, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 12~~, a through hole is formed between the capacitors in the resin layer. A signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed bypassing through the high dielectric body. The through holes enable the establishment of the electric connection between the top and bottom surfaces of the printed circuit board. It is

possible to provide wires under the capacitors through the buildup layer, and therefore, pins and BGAs of the capacitors can be provided.

On page 9, the paragraph beginning on line 26, please amend as follows:

A method for manufacturing a printed circuit board according to an aspect of the present invention ~~claim 13~~ is characterized by comprising at least the following steps (a) to (c):

(a) forming penetrating openings in a resin material having a core material impregnated with a resin;

(b) attaching a resin material to the resin material formed with the penetrating openings to form a core substrate having a cavity;

(c) mounting a plurality of capacitors in the cavity of the core substrate; and

(d) charging a resin between the capacitors.

On page 10, the paragraph beginning on line 4, please amend as follows:

~~In the invention recited in claim 13, a~~ A large cavity is formed in a core substrate. With this arrangement, a plurality of capacitors can be reliably provided in the core substrate. In addition, since a plurality of capacitors are mounted in the cavity, the plurality of capacitors are aligned to the same heights with each other. As a result, the surface of the core substrate becomes flat and smooth. In addition, the cavity is formed in such a manner as to have a large area, the capacitors can be located at accurate positions. The interlayer resin insulating layer and the conductor circuit can be properly formed on the core substrate without impairing the flatness and smoothness of the core substrate. Therefore, the rate of generating defective printed circuit boards can be lowered. In addition, a resin is charged between the capacitors, the capacitors can be fixed in the cavity after the positions of capacitors are determined within the cavity.

On page 10, the paragraph beginning on line 22, please amend as follows:

In accordance with another aspect of the invention ~~recited in claim 14~~, a pressure is applied to the upper surfaces of the plurality of capacitors in the cavity, or tapped to align the

chip capacitors into the same heights with each other. By this process, even if chip capacitors having largely different sizes from each other are provided in the cavity, they are aligned into the completely same heights with each other. As a result, the core substrate can has a flat and smooth surface. The interlayer resin insulating layer and the conductor circuit can be properly formed on the core substrate without impairing the flatness and smoothness of the core substrate, and therefore, the rate of generating defective printed circuit boards can be lowered.

On page 11, the paragraph beginning on line 3, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 15~~, since through holes are formed between the capacitors in the resin layer, a signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. The through holes enables the establishment of the electric connection between the top and bottom surfaces of the printed circuit board. It is possible to provide wires under the capacitors through the buildup layer, and therefore, pins and BGAs of the capacitors can be provided.

On page 11, the paragraph beginning on line 16, please amend as follows:

In order to solve the above problem, a printed circuit board in accordance with aspects of the invention ~~according to claim 16~~ is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated on the core substrate,

wherein the core substrate incorporates a connection layer formed by an insulating resin layer including at least one or more layer, and an accommodation layer accommodating a capacitor in its spot-faced section.

On page 11, the paragraph beginning on line 32, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 16~~, capacitors are mounted within the printed circuit board. In this manner, the distance between the IC chip and each capacitor is shortened, and the loop inductance can be lowered. The core substrate incorporates one or more connection layers and an accommodation layer for accommodating the capacitors. Since the capacitors are accommodated within the accommodation layer

having large thickness, the thickness of the core substrate does not become large. The thickness of the printed circuit board does not become large even if the interlayer resin insulating layer and the conductor circuit are laminated on the core substrate.

On page 12, the paragraph beginning on line 20, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 17~~, an accommodation layer is constituted by a resin substrate having a core material impregnated with a resin. As a result, sufficiently high strength can be given to the core substrate.

On page 12, the paragraph beginning on line 25, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 18~~, the connection layer and the capacitors accommodated in the accommodation layer are connected to each other through a conductive adhesive. In this manner, the electrical connection with the capacitors and the adhesion between the capacitors and the connection layer can be assured. The conductive adhesive may be a material having both conductivity and adhesiveness such as a solder (Sn/Pb, Sn/Sb, Sn/Ag, Sn/Ag/Cu), conductive pastes, and resins impregnated with metal particles.

On page 13, the paragraph beginning on line 7, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 19~~, a circuit which is connected to the conductive adhesive is provided between the connection layer and the accommodation layer. In this manner, a connection with the capacitors can be reliably established through the circuit. By providing a circuit constituted by a metal layer between the connection layer and the accommodation layer, the warpage of the core substrate can be prevented.

On page 13, the paragraph beginning on line 15, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 20~~, an external substrate (i.e. daughter board, mother board) to be connected to the back surface of the printed circuit board is connected to the terminals of the capacitor through the via holes formed in the connection layer and the through holes formed in the core substrate. That is, although the accommodation layer having a core material is hard to process, though holes are formed in

the accommodation layer so that the terminals of the capacitors are not directly connected to the outside surface. As a result, the reliability of the connection can be increased.

On page 13, the paragraph beginning on line 27, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 21~~, a wiring for connecting an IC chip and an external substrate is provided between capacitors, and a signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. By mounting a capacitor for power supply, large electric power can be easily supplied to the IC chip. Furthermore, noise generated when a signal is transmitted in the printed circuit board can be reduced.

On page 14, the paragraph beginning on line 11, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 22~~, a chip capacitor in which electrodes are formed along an inside of the outer edge thereof is used. With this arrangement, a large space can be used for external electrodes even if a conduction is established through the via holes, and therefore, the broadened range of alignment is allowed. As a result, a problem of disconnection is eliminated.

On page 14, the paragraph beginning on line 19, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 23~~, a chip capacitor in which electrodes are formed in matrix is used. It becomes easy to accommodate a large chip capacitor in a core substrate. Therefore, it becomes possible to increase an electrostatic capacity, and a problem concerning electricity can be solved. In addition, warpage is hard to generate in the printed circuit board even if the printed circuit board undergoes various thermal histories.

On page 14, the paragraph beginning on line 33, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 24~~, a capacitor is mounted on the surface of the printed circuit board on top of the capacitors accommodated in the substrate. Since the capacitors are accommodated within the printed circuit board, the

distance between the IC chip and each capacitor is shortened. In addition, the loop inductance can be lowered, and electric power can be instantaneously provided. On the other hand, since a capacitor is provided on the surface of the printed circuit board as well, a capacitor having a large capacity can be mounted. In this manner, large electric power can be easily supplied to the IC chip.

On page 15, the paragraph beginning on line 12, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 25~~, the chip capacitor mounted on the surface of the printed circuit board has an electrostatic capacity same or larger than the electrostatic capacity of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 15, the paragraph beginning on line 20, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 26~~, the chip capacitor mounted on the surface of the printed circuit board has an inductance same or smaller than the inductance of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 16, the paragraph beginning on line 2, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 27~~, copper is provided around the respective chip capacitors. In this manner, no migration is generated in the capacitors incorporated in the printed circuit board. In addition, the capacitors never peel from the resin charged between the capacitors, and no cracks are created. The accommodation characteristic is enhanced, and as a result, there is no deterioration in electric characteristics.

On page 16, the paragraph beginning on line 10, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 28~~, a resin is charged between the spot-faced section of the core substrate and the capacitor. The thermal expansion coefficient of the resin is set to the value lower than the thermal expansion

coefficient of the core substrate, that is, is set to the value close to that of the chip capacitor made of ceramics. In this manner, even if internal stress is generated between the core substrate and the resin insulating layer, and the chip capacitor caused by the difference in the thermal expansion coefficients therebetween, cracks and peelings do not easily occur. As a result, high reliability can be attained. In addition, the generation of migration can be prevented.

On page 16, the paragraph beginning on line 24, please amend as follows:

A method for manufacturing a printed circuit board according to aspects of the present invention ~~claim 29~~ is characterized by comprising at least the following steps (a) to (c):

(a) forming a circuit pattern on a resin plate on its one side or both sides, and connecting a capacitor to the circuit pattern through an adhesive material;

(b) attaching a resin substrate formed with a cavity for accommodating the capacitor to the resin plate to form a core substrate; and

(c) forming openings extending to electrodes of the capacitor in the resin plate to form via holes.

On page 17, the paragraph beginning on line 2, please amend as follows:

In the method for manufacturing a printed circuit board according to aspects of the invention ~~recited in claim 29~~, it becomes possible to accommodate chip capacitors in a core substrate. As a result, a printed circuit board having a lowered loop inductance can be provided.

On page 17, the paragraph beginning on line 7, please amend as follows:

In the method for manufacturing a printed circuit board according to aspects of the invention ~~recited in claim 30~~, a resin substrate accommodating capacitors and a resin plate are attached to each other by applying a pressure from both sides to form a core substrate. Thus-formed core substrate has a flat surface. As a result, an interlayer resin insulating layer and a conductor circuit having high reliability can be laminated on the core substrate.

On page 17, the paragraph beginning on line 15, please amend as follows:

In the method for manufacturing a printed circuit board according to aspects of the invention ~~recited in claim 31~~, a through hole for an IC chip and an external substrate is provided between capacitors. A signal line does not pass through the chip capacitors 20 made of ceramics. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. By mounting a capacitor for power supply, it becomes possible to easily provide large electric power to the IC chip.

On page 17, the paragraph beginning on line 26, please amend as follows:

In order to solve the above-described problems, in the invention ~~recited in claim 32~~, a printed circuit board incorporates a core substrate, and a resin insulating layer and a conductor circuit laminated to a core substrate. The core substrate incorporates a connection layer formed by an insulating resin layer including at least one or more layer, and an accommodation layer formed by a resin layer accommodating capacitors and including two or more layers.

On page 18, the paragraph beginning on line 9, please amend as follows:

In the invention ~~recited in claim 32~~, capacitors are mounted within the printed circuit board. In this manner, the distance between the IC chip and each capacitor is shortened, and the loop inductance can be lowered. The core substrate incorporates one or more connection layers and an accommodation layer for accommodating the capacitors. Since the capacitors are accommodated within the accommodation layer having large thickness, the thickness of the core substrate does not become thick. The thickness of the printed circuit board does not become thick even if the interlayer resin insulating layer and the conductor circuit are laminated on the core substrate.

On page 18, the paragraph beginning on line 30, please amend as follows:

A printed circuit board according to aspects of the invention ~~to clam 33~~ is characterized by comprising a resin insulating layer and a conductor circuit laminated to the core substrate, wherein the core substrate incorporates a connection layer formed by an insulating resin layer including at least one or more layer, and an accommodation layer

formed by a resin layer accommodating a capacitor and including two or more layers, and vias for establishing a connection with the capacitor are formed on both sides of the core substrate.

On page 19, the paragraph beginning on line 7, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 33~~, capacitors are mounted within the printed circuit board. In this manner, the distance between the IC chip and each capacitor is shortened, and the loop inductance can be lowered. The core substrate is constituted by at least one or more connection layer and an accommodation layer for accommodating the capacitors. Since the capacitors are accommodated within the accommodation layer having large thickness, the thickness of the core substrate does not become large. The thickness of the printed circuit board does not become large even if the interlayer resin insulating layer and the conductor circuit are laminated on the core substrate. Furthermore, since vias to be connected to the capacitors are formed on both sides, the wire length from the capacitors to the IC chip and the external substrate is shortened.

On page 19, the paragraph beginning on line 23, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 36~~, a wiring for connecting an IC chip and an external substrate is provided between capacitors, and a signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. By mounting a capacitor for power supply, large electric power can be easily supplied to the IC chip. Furthermore, by providing a capacitor for ground, noise generated when a signal is transmitted in the printed circuit board can be reduced.

On page 20, the paragraph beginning on line 8, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 37~~, a chip capacitor in which electrodes are formed along an inside of the outer edge thereof is used. With this arrangement, a large space can be used for external electrodes even if a conduction is established through the via holes, and therefore, the broadened range of alignment is allowed. As a result, a problem of disconnection is eliminated.

On page 20, the paragraph beginning on line 16, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 38~~, a chip capacitor in which electrodes are formed in matrix is used. It becomes easy to accommodate a large chip capacitor in a core substrate. Therefore, it becomes possible to increase an electrostatic capacity, and a problem concerning electricity can be solved. In addition, warpage is hard to generate in the printed circuit board even if the printed circuit board undergoes various thermal histories.

On page 20, the paragraph beginning on line 30, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 39~~, a capacitor is mounted on the surface of the printed circuit board on top of the capacitors accommodated in the substrate. Since the capacitors are accommodated within the printed circuit board, the distance between the IC chip and each capacitor is shortened. In addition, the loop inductance can be lowered, and electric power can be instantaneously provided. On the other hand, since a capacitor is provided on the surface of the printed circuit board as well, a capacitor having a large capacity can be mounted. In this manner, large electric power can be easily supplied to the IC chip.

On page 21, the paragraph beginning on line 9, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 40~~, the chip capacitor mounted on the surface of the printed circuit board has an electrostatic capacity same or larger than the electrostatic capacity of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 21, the paragraph beginning on line 17, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 41~~, the chip capacitor mounted on the surface of the printed circuit board has an inductance same or larger than the inductance of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 21, the paragraph beginning on line 24, please amend as follows:

In accordance with aspects of the invention ~~recited in claims 42 and 43~~, an electric connection for electrodes formed with a metal film of the capacitors is established by via holes formed by plating. The electrodes of the chip capacitor are made by metallizing, and have pits and projections on their surfaces. However, the surfaces become smooth by formation of the metal film, and the via holes are then formed on the smooth surfaces. In this manner, when penetrating openings are formed in the resin coating the electrodes, no resin remains, and a reliability of the connection between the via holes and the electrodes can be increased. Furthermore, since the via holes are made by plating into the electrodes formed with the copper plated film, the electrodes are firmly connected to the via holes. No disconnection occurs between the electrodes and via holes even when a heat cycle test is conducted.

On page 22, the paragraph beginning on line 24, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 44~~, the chip capacitors are accommodated in the printed circuit board in the state where at least a part of the electrodes of each capacitor is uncoated with a coating layer and exposed to the outside. An electric connection for the electrode exposed from the coating layer is established. The metal exposed from the coating layer preferably includes copper as a main component, because the connection resistance can be lowered.

On page 22, the paragraph beginning on line 33, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 45~~, the thermal expansion coefficient of the insulating adhesive is set to the value lower than the thermal expansion coefficient of the accommodating layer, that is, is set to the value close to that of the chip capacitor made of ceramics. In this manner, even if internal stress is generated between the core substrate and the resin insulating layer, and the chip capacitor caused by the difference in the thermal expansion coefficients therebetween, cracks and peelings do not easily occur when a heat cycle test is conducted. As a result, high reliability can be attained.

On page 23, the paragraph beginning on line 11, please amend as follows:

A method for manufacturing a printed circuit board according to another aspect of the invention ~~claim 46~~ is characterized by comprising at least the following steps (a) to (e):

(a) forming penetrating openings for accommodating a capacitor in a first resin material having a core material impregnated with a resin;

(b) attaching a second resin material to the first resin material formed with the penetrating openings to form an accommodation layer having a section for accommodating a capacitor;

(c) accommodating the capacitor in the accommodation layer;

(d) attaching a third insulating resin layer to the accommodation layer formed in the step (c) to form a core substrate; and

(e) forming openings extending to electrodes of the capacitor in the third insulating resin layer to form via holes.

On page 23, the paragraph beginning on line 29, please amend as follows:

A method for manufacturing a printed circuit board according to another aspect of the invention ~~claim 47~~ is characterized by comprising at least the following steps (a) to (e):

(a) forming penetrating openings for accommodating a capacitor in a first resin material having a core material impregnated with a resin;

(b) providing a capacitor to the second resin material at a position corresponding to a section for accommodating a capacitor in the resin material;

(c) attaching the first resin material subjected to the step (a) and the second resin material subjected to the step (b) to each other to form an accommodation layer accommodating the capacitor;

(d) attaching a third insulating resin layer to the accommodation layer to form a core substrate; and

(e) forming openings in the third insulating resin layer extending to electrodes of the capacitor to form via holes.

On page 24, the paragraph beginning on line 14, please amend as follows:

A method for manufacturing a printed circuit board according to yet another aspect of the invention ~~to claim 48~~ is characterized by comprising at least the following steps (a) to (f):

(a) forming penetrating openings for accommodating a capacitor in a first resin material having a core material impregnated with a resin;

(b) providing a capacitor to the second resin material at a position corresponding to a section for accommodating a capacitor in the resin material;

(c) attaching the first resin material subjected to the step (a) and the second resin material subjected to the step (b) to each other to form an accommodation layer accommodating the capacitor;

(d) attaching a third insulating resin layer to the accommodation layer to form a core substrate;

(e) forming openings in the third insulating resin layer extending to electrodes of the capacitor to form via holes; and

(f) forming a conductive film in the penetrating openings of the first resin material and the openings of the third resin material to form via holes.

On page 25, the paragraph beginning on line 2, please amend as follows:

In the method for manufacturing a printed circuit board according to another aspect of the invention ~~recited in claims 46 and 47~~, it becomes possible to accommodate chip capacitors in a core substrate. As a result, a printed circuit board having a lowered loop inductance can be provided.

On page 25, the paragraph beginning on line 7, please amend as follows:

In the method for manufacturing a printed circuit board according to another aspect of the invention ~~recited in claim 48~~, it becomes possible to accommodate chip capacitors in a core substrate. As a result, a printed circuit board having a lowered loop inductance can be provided. Since via holes are formed on both surfaces of the core substrate, the wire length from the capacitors to the IC chip and the external substrate is shortened.

On page 25, the paragraph beginning on line 15, please amend as follows:

In the method for manufacturing a printed circuit board according to another aspect of the invention ~~recited in claim 49~~, a resin substrate accommodating capacitors and a resin plate are attached to each other by applying a pressure from both sides to form a core substrate. Thus-formed core substrate has a flat surface. As a result, an interlayer resin insulating layer and a conductor circuit having high reliability can be laminated on the core substrate.

On page 25, the paragraph beginning on line 23, please amend as follows:

A printed circuit board according to another aspect of the present invention ~~claim 50~~ is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated to the core substrate, wherein the core substrate incorporates an accommodating layer having penetrating openings in each of which a capacitor is accommodated, and connection layers each made of an insulating resin layer and provided on the front surface and the back surface of the accommodation layer.

On page 26, the paragraph beginning on line 7, please amend as follows:

~~In the invention recited in claim 50, capacitors~~ Capacitors are mounted within the printed circuit board. In this manner, the distance between the IC chip and each capacitor is shortened, and the loop inductance can be lowered. The core substrate incorporates at least one or more connection layers and an accommodation layer for accommodating the capacitors. Since the capacitors are accommodated within the accommodation layer having large thickness, the thickness of the core substrate does not become large. The thickness of the printed circuit board does not become large even if the interlayer resin insulating layer and the conductor circuit are laminated on the core substrate.

On page 27, the paragraph beginning on line 4, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 51~~, an accommodation layer is constituted by a resin substrate having a core material impregnated with a resin. As a result, sufficiently high strength can be given to the core substrate.

On page 27, the paragraph beginning on line 9, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 52~~, the capacitors are fixed in the penetrating openings of the accommodation layer through an insulating adhesive. In this manner, the capacitors can be fixed to proper positions.

On page 27, the paragraph beginning on line 14, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 53~~, the IC chip mounted on the front surface of the printed circuit board, the external substrate mounted on the back surface of the printed circuit board (i.e. daughter board, mother board) are connected to the terminals of the capacitors through the via holes formed in the connection layer. That is, the terminals of the capacitors, the IC chip, and the external substrate are directly connected to each other. As a result, the length of electric wire can be shortened.

On page 27, the paragraph beginning on line 24, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 54~~, a wiring for connecting an IC chip and an external substrate is provided between capacitors, and a signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. By mounting a capacitor for power supply, large electric power can be easily supplied to the IC chip.

On page 28, the paragraph beginning on line 8, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 55~~, a capacitor is mounted on the surface of the printed circuit board on top of the capacitors accommodated in the substrate. Since the capacitors are accommodated within the printed circuit board, the distance between the IC chip and each capacitor is shortened. In addition, the loop inductance can be lowered, and electric power can be instantaneously provided. On the other hand, since a capacitor is provided on the surface of the printed circuit board as well, a capacitor having a large capacity can be mounted. In this manner, large electric power can be easily supplied to the IC chip.

On page 28, the paragraph beginning on line 20, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 56~~, the chip capacitor mounted on the surface of the printed circuit board has an electrostatic capacity same or larger than the electrostatic capacity of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 28, the paragraph beginning on line 28, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 57~~, the chip capacitor mounted on the surface of the printed circuit board has an inductance same or larger than the inductance of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 29, the paragraph beginning on line 2, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 58~~, a chip capacitor in which electrodes are formed along an inside of the outer edge thereof is used. With this arrangement, a large space can be used for external electrodes even if a conduction is established through the via holes, and therefore, the broadened range of alignment is allowed. As a result, a problem of disconnection is eliminated.

On page 29, the paragraph beginning on line 10, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 59~~, a chip capacitor in which electrodes are formed in matrix is used. It becomes easy to accommodate a large chip capacitor in a core substrate. Therefore, it becomes possible to increase an electrostatic capacity, and a problem concerning electricity can be solved. In addition, warpage is hard to generate in the printed circuit board even if the printed circuit board undergoes various thermal history.

On page 29, the paragraph beginning on line 24, please amend as follows:

In accordance with aspects of the invention ~~recited in claims 60 and 61~~, an electric connection for electrodes formed with a metal film of the capacitors is established by via holes formed by plating. The electrodes of the chip capacitor are made by metallizing, and

have pits and projections on their surfaces. However, the surfaces become smooth by formation of the metal film, and the via holes are then formed on the smooth surfaces. In this manner, when penetrating openings are formed in the resin coating the electrodes, no resin remains, and a reliability of the connection between the via holes and the electrodes can be increased. Furthermore, since the via holes are made by plating into the electrodes formed with the copper plated film, the electrodes are firmly connected to the via holes. No disconnection occurs between the electrodes and via holes even when a heat cycle test is conducted.

On page 30, the paragraph beginning on line 23, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 62~~, the chip capacitors are accommodated in the printed circuit board in the state where at least a part of the electrodes of each capacitor is uncoated with a coating layer and exposed to the outside. An electric connection for the electrode exposed from the coating layer is established. The metal exposed from the coating layer preferably includes copper as a main component, because the connection resistance can be lowered.

On page 30, the paragraph beginning on line 32, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 63~~, the thermal expansion coefficient of the resin is set to the value lower than the thermal expansion coefficient of the core substrate, that is, is set to the value close to that of the chip capacitor made of ceramics. In this manner, even if internal stress is generated between the core substrate and the resin insulating layer, and the chip capacitor caused by the difference in the thermal expansion coefficients therebetween, cracks and peelings do not easily occur when a heat cycle test is conducted. As a result, high reliability can be attained. In addition, the generation of migration can be prevented.

On page 31, the paragraph beginning on line 12, please amend as follows:

A method for manufacturing a printed circuit board according to an aspect of the present invention ~~claim 64~~ is characterized by comprising at least the following steps (a) to (d):

(a) forming penetrating openings for accommodating a capacitor in a first resin material having a core material impregnated with a resin;

(b) accommodating a capacitor in each of the penetrating openings of the first resin material;

(c) attaching a second resin material to the first resin material to form a core substrate; and

(d) forming openings extending to electrodes of the capacitor in the second resin material of the core substrate to form via holes.

On page 31, the paragraph beginning on line 25, please amend as follows:

In the method for manufacturing a printed circuit board according to additional aspects of the invention ~~recited in claim 64~~, it becomes possible to accommodate chip capacitors in a core substrate. As a result, a printed circuit board having a lowered loop inductance can be provided.

On page 31, the paragraph beginning on line 30, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 65~~, a wiring for connecting an IC chip and an external substrate is provided between capacitors, and a signal line does not pass through the chip capacitors. This structure eliminates the problems that the impedance becomes discontinuous by the high dielectric body to generate a reflection, and that the transmission is delayed by passing through the high dielectric body. By mounting a capacitor for power supply, large electric power can be easily supplied to the IC chip.

On page 32, the paragraph beginning on line 7, please amend as follows:

In the method for manufacturing a printed circuit board according to additional aspects of the invention ~~recited in claim 66~~, a resin substrate accommodating capacitors and a resin plate are attached to each other by applying a pressure from both sides to form a core substrate. Thus-formed core substrate has a flat surface. As a result, an interlayer resin insulating layer and a conductor circuit having high reliability can be laminated on the core substrate.

On page 32, the paragraph beginning on line 15, please amend as follows:

In order to solve the above-described problems, in the invention ~~recited in claim 67~~, a printed circuit board incorporates a core substrate, and a resin insulating layer and a conductor circuit laminated to a core substrate. The capacitors are accommodated in the core substrate.

On page 32, the paragraph beginning on line 28, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 67~~, capacitors are mounted within the printed circuit board. In this manner, the distance between the IC chip and each capacitor is shortened, and the loop inductance can be lowered. Since the capacitors are accommodated within the accommodation layer having large thickness, the thickness of the core substrate does not become thick. The thickness of the printed circuit board does not become thick even if the interlayer resin insulating layer and the conductor circuit are laminated on the core substrate.

On page 33, the paragraph beginning on line 14, please amend as follows:

A printed circuit board according to an aspect of the present invention ~~claim 68~~ is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated to the core substrate, wherein the chip capacitor is accommodated in the printed circuit board in the state where at least a part of electrodes of each capacitor is uncoated with a coating layer and exposed to the outside, and an electric connection for the electrode exposed from the coating layer is established by plating.

On page 33, the paragraph beginning on line 24, please amend as follows:

In accordance with aspects of the invention ~~recited in claims 68 and 69~~, the chip capacitors are accommodated in the printed circuit board in the state where at least a part of the electrodes of each capacitor is uncoated with a coating layer and exposed to the outside. An electric connection for the electrode exposed from the coating layer is established. The metal exposed from the coating layer includes preferably copper as a main component This is because the connection to the exposed metal provided with plating is increased, and as a result, the difference in electric characteristics is cancelled and the connection resistance can be lowered.

On page 34, the paragraph beginning on line 3, please amend as follows:

A printed circuit board according to an aspect of the present invention ~~claim 70~~ is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated to the core substrate, wherein the chip capacitor is accommodated in the state where a metal film is formed on electrodes of the capacitor, and an electric connection for the electrodes formed with the metal film is established by plating.

On page 34, the paragraph beginning on line 11, please amend as follows:

In accordance with aspects of the invention ~~recited in claims 70 and 71~~, an electric connection for electrodes formed with a metal film of the capacitors is established by via holes formed by plating. The electrodes of the chip capacitor are made by metallizing, and have pits and projections on their surfaces. However, the surfaces become smooth by formation of the metal film, and the via holes are then formed on the smooth surfaces. In this manner, when penetrating openings are formed in the resin coating the electrodes, no resin remains, and a reliability of the connection between the via holes and the electrodes can be increased. Furthermore, since the via holes are made by plating into the electrodes formed with the copper plated film, the electrodes are firmly connected to the via holes. No disconnection occurs between the electrodes and via holes even when a heat cycle test is conducted.

On page 35, the paragraph beginning on line 5, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 72~~, a chip capacitor in which electrodes are formed along an inside of the outer edge thereof is used. With this arrangement, a large space can be used for external electrodes even if a conduction is established through the via holes, and therefore, the broadened range of alignment is allowed. As a result, a problem of disconnection is eliminated.

On page 35, the paragraph beginning on line 13, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 73~~, a chip capacitor in which electrodes are formed in matrix is used. It becomes easy to accommodate a large chip capacitor in a core substrate. In addition, warpage is hard to generate in the printed circuit board even if the printed circuit board undergoes various thermal histories.

On page 35, the paragraph beginning on line 20, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 74~~, a plurality of chip capacitors from each of which a plurality of pieces are to be obtained may be coupled to each other into one piece unit and used. In this manner, an electrostatic capacity can be properly adjusted and the IC chip can be properly operated.

On page 35, the paragraph beginning on line 26, please amend as follows:

A printed circuit board according to an aspect of the present invention ~~claim 75~~ is characterized by comprising a core substrate, and a resin insulating layer and a conductor circuit laminated to the core substrate, wherein a capacitor is accommodated in the core substrate, and a capacitor is mounted on the surface of the printed circuit board.

On page 35, the paragraph beginning on line 33, please amend as follows:

~~In the invention recited in claim 75, a~~ A capacitor is mounted on the surface of the printed circuit board on top of the capacitors accommodated in the substrate. Since the capacitors are accommodated within the printed circuit board, the distance between the IC chip and each capacitor is shortened. In addition, the loop inductance can be lowered, and electric power can be instantaneously provided. On the other hand, since a capacitor is provided on the surface of the printed circuit board as well, a capacitor having a large capacity can be mounted. In this manner, large electric power can be easily supplied to the IC chip.

On page 36, the paragraph beginning on line 12, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 76~~, the chip capacitor mounted on the surface of the printed circuit board has an electrostatic capacity same or larger than the electrostatic capacity of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 36, the paragraph beginning on line 20, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 77~~, the chip capacitor mounted on the surface of the printed circuit board has an inductance same or larger than the

inductance of the chip capacitor incorporated in the printed circuit board. In this manner, there is no shortage of power supply at a high frequency domain, and the IC chip reliably exhibits a desired operation.

On page 37, the paragraph beginning on line 2, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 78~~, a copper plated film is coated on the surface of a metallized electrodes of a chip capacitor.

On page 37, the paragraph beginning on line 5, please amend as follows:

In accordance with aspects of the invention ~~recited in claim 78~~, a metal film is formed on the electrodes of the chip capacitors. As a result, the chip capacitor have a flat surface. When the chip capacitors are accommodated in the printed circuit board, and penetrating openings are formed in the resin which covers the electrodes, no resin is left. In this manner, the connection between the via holes and the electrodes has increased reliability.